MELODICHTHYS, A NEW GENUS WITH TWO NEW SPECIES OF UPPER BATHYAL BYTHITIDS (PISCES, OPHIDIIFORMES)

by

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RÉSUMÉ.– Un nouveau genre *Melodichthys* n. gen. regroupant deux espèces, *M. hadrocephalus* n.sp. (espèce-type) et *M. paxtoni* n.sp., est décrit et placé parmi les poissons Bythitidae dans la sous-famille des Brosmophycinae, en raison de la présence d'une nageoire caudale séparée des nageoires dorsale et anale. *Melodichthys* diffère de tous les autres genres de la sous-famille par le nombre élevé de branchiospines bien développées. *M. hadrocephalus* capturé au large de la Bretagne et *M. paxtoni* capturé au large des Nouvelles Galles du Sud sont très différents, mais sont pour l'instant considérés comme congénériques.

SUMMARY.– *Melodichthys* n. gen., containing *M. hadrocephalus* n. sp. (type species) and *M. paxtoni* n. sp. is described and placed in the bythitid fish subfamily Brosmophycinae because of having the caudal fin separate from the dorsal and anal fins. *Melodichthys* differs from all other genera in the subfamily by its high number of developed gill rakers. *M. hadrocephalus* caught off Brittany and *M. paxtoni* from off New South Wales are very different but are for the present treated as congeneric.

Key-words : Pisces, Ophidiiformes, Bythitidae, *Melodichthys*, Taxonomy, New genus, New species, *Melodichthys hadrocephalus*, *Melodichthys paxtoni*.

Two small, un-named bythitid fishes from opposite ends of the world, off Brittany and off New South Wales, agree with each other and differ from all other members of the family in a single character, a high number of developed gill rakers. Even as they may be assigned to the subfamily Brosmophycinae because of possessing free caudal fins (Cohen & Nielsen 1978 : 52). Neither fish fits easily into a known genus, and although the two specimens differ from each other in many respects, for the present we treat them as two species in a single new genus.

Melodichthys n. gen.

Type species *M. hadrocephalus* (see below)

Diagnosis

Brosmophycine fishes (Cohen & Nielsen 1978 : 52), except for a higher number of developed rakers (11-15 *vs* 0-7) on anterior gill arch. Short-bodied, with an in-

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distinct lateral line. Scales small, imbricate on body; head with non-imbricate scales or naked. Dorsal fin origin above base of pectoral fin; anal fin origin well behind midpoint of fish, at close to two-thirds of standard length; ventral finray short, not reaching end of pectoral, which falls short of anal fin origin; pectoral radials somewhat elongated, but peduncle broader than long. Opercular spine strong. Anterior nostril tubular, close to upper lip. Some jaw teeth caniniform, palatines with teeth. Pseudobranchial filaments 1-3. Branchiostegal rays 7. Gill membranes free of isthmus.

Name

The generic name refers to the name of the fishing vessel from which the holotype of the type species was trawled.

Species

The two known species assigned to *Melodichthys* are compared in Table I, and in the species diagnosis.

Table I.– Diagnostic characters of *Melodichthys* spp.

	hadrocephalus	*paxtoni*
Head scales	present	absent
Posterior end of maxillary	free	sheathed
Covering of eye	opaque	clear
Cross-section of opercular spine	triangular	oval
Depressed neural spines	blunt	pointed
Head pores	few	many

Similarities

Separation of the caudal fin from the dorsal and anal fins places *Melodichthys* in the subfamily Brosmophycinae. This subfamily is divided into two tribes. Brosmophycini and Dinematichthyini, based on one character only, whether or not the male intromittant organ has ossified parts. Because our material of this genus consists only of two female specimens, a tribal assignment is not now possible.

Melodichthys shares few unique similarities with any known brosmophycine genera. Two such resemblances, however, are with the South African tidepool genus *Bidenichthys*; both genera have a long preanal distance, 60 % or more of standard length, and rather elongated pectoral radials. Also, otolith morphology of the type species of *Melodichthys* shows similarities with *Bidenichthys*. The two genera differ in a number of respects, including number of precaudal vertebrae (*Melodichthys* 12-13 *vs* 15 in *Bidenichthys*) and number of branchiostegal rays (*Melodichthys* 7 *vs* 8 in *Bidenichthys*).

Melodichthys hadrocephalus n. sp.

(Figs. 1-3)

Material : Holotype MNHN 1980-392, SL 97 mm, ♀. Fishing vessel « Melodie », Celtic Sea (48°N, 8°W), 300-400 m, bottom trawl, Nov. 1984.

Diagnosis : A *Melodichthys* with thick skin. Non-imbricate scales on head. Eye-covering opaque. Head pores few, only two along each mandible near symphysis. Posterior end of maxillary free and not vertically expanded. Opercular spine well developed, triangular in cross section. Precaudal vertebrae nos. 5-9 depressed with blunt neural spines.

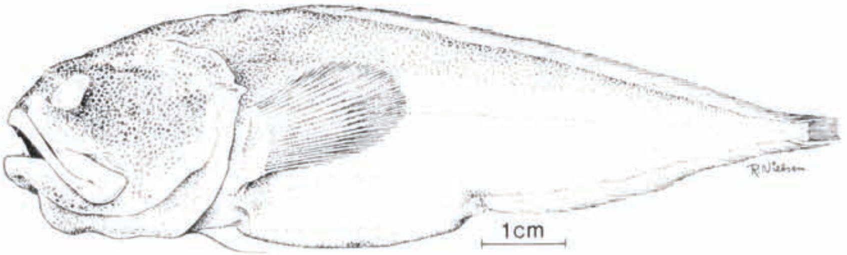

Fig. 1.– *Melodichthys hadrocephalus*. Holotype, SL 97 mm (MNHN 1986-392). Drawn by R. Nielsen.

Description

Meristic characters. Dorsal finrays 64, caudal 14, anal 43, pectoral 22, ventral 1, anterior gill arch with 27 rakers of which about 15 are developed (Fig. 2), pseudobranchial filaments 3, vertebrae 13+32 (incl. ural centra), anterior dorsal finray above vertebra no. 6, anterior anal finray below dorsal finray no. 23 and vertebra no. 19.

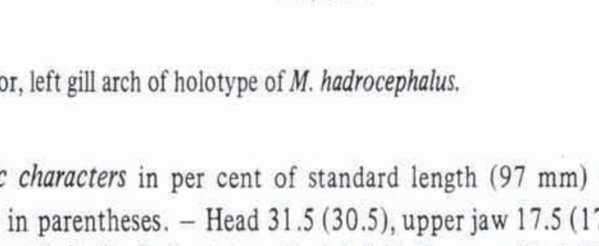

Fig. 2.– Anterior, left gill arch of holotype of *M. hadrocephalus*.

Morphometric characters in per cent of standard length (97 mm) with measurements in mm in parentheses. – Head 31.5 (30.5), upper jaw 17.5 (17), diameter of pigmented eye 4.9 (4.8), fleshy interorbital 4.6 (4.5), postorbital 20.0 (19.8), predorsal 35.0 (34), preanal 63 (61), ventral fin base to anal fin 40.0 (39), ventral fin length 14.5 (14) and pectoral fin length 20.0 (19.5).

Head robust, about one-third of standard length. Upper jaw ends well behind eye. Lateral line indistinct without papillae. Pectoral fins broad. Ventral fins with one short ray in each. Head and anterior dorsal part of body with brown pigmentation. Two pairs of pores at the mandibles near symphysis. Oral and gill cavity faintly pigmented. Eyes bluish.

The anterior, left gill arch is shown in Fig. 3. There is an even transition between short and long rakers. Epibranchial with 5 rakers (2-3 long), one long raker in the angle between the epi- and ceratobranchial, 15 rakers (12 long) on ceratobranchial and 6 short rakers on hypobranchial. Upper arm with 20 and lower arm with 50 gill filaments. Pseudobranch with 3 small filaments.

Teeth. Dentaries with several rows of small, pointed teeth anteriorly, with the number of rows decreasing posteriad ; inner row continuing to posterior end of dentaries with 15 strong, recurved teeth. Premaxillaries with several tooth rows anteriorly, decreasing to a single row posteriorly ; all teeth small and pointed except for one recurved canine near symphysis ; posterior fourth edentate. Vomer V-shaped with 12-14 teeth, 6 of which are recurved canines. Palatines with two rows of canines ; inner row with about 10 larger and outer row with 6 smaller canines. Basibranchial tooth patches not developed.

Axial skeleton (from radiographs). Precaudal vertebrae 13, caudal 32 including ural centra. Anterior neural spine two-thirds length of second spine. Vertebrae nos. 5-9 with depressed, blunt neural spines. Vertebrae 1-6 without parapophyses and with long, thin ribs directly attached to centra. Small epipleural ribs present. Parapophyses increasing in size from vertebra no. 7 to 13.

Viscera. A large, thick-walled stomach ending one third of the length of the abdominal cavity from the anus. The long intestine is arranged in three coils. The ovaries seem to be newly spent with a few eggs left and with scattered spermatozoans partly in bundles, indicating spermatophores.

Otolith (description by W. Schwarshans). A compressed, oval otolith with moderately pointed anterior and posterior tips. Dorsal and ventral rims regularly curved, smooth and almost symmetrical. Inner face flat, but region around sulcus somewhat elevated. Sulcus placed in center of inner face ; it is short, but wide and moderately deep. Ostium about 3 times as long and wide as cauda, from which it is indistinctly separated . Ostium does not open to anterior rim, but is connected with a narrow ostial furrow. Area shallow and ventral line very deep, long and prominent located halfway between ventral rim and sulcus. Outer face flat and smooth. Otolith moderately thin with blunt rims.

The *Melodichthys* otolith strongly resembles the otoliths of the fossil genus *Otarionichthys* Gaemers, 1984 only known from the type species *O. occulens* (Koken, 1891) from Oligocene of the southern North Sea Basin. They differ from each other mainly by the very wide ostium and prominent ventral line of *Melodichthys.*

Name : Derives from Greek *hadros*, bulky and *cephalus,* head.

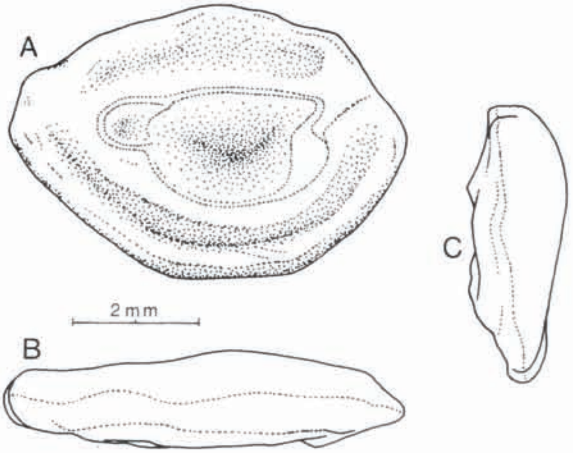

Fig. 3.– Left sagitta from holotype of *M. hadrocephalus*. A. Median view. B. Dorsal view. C. Anterior view. (Drawn by W. Schwarzhans).

Melodichthys paxtoni n. sp.
(Fig. 4)

Material : Holotype Australian Museum E. 5264, SL 73.6 mm, ♀. « Endeavour », southeast of Cape Everard, Victoria, Australia, 165-275 m, 9 May, 1914.

Diagnosis : A *Melodichthys* with thin skin, scales absent from head, eye-cover transparent. Head pores not reduced in number, 7 in preoperculo-mandibular series as well as present in other series. Posterior end of maxillary partly covered by a fold of skin. Opercular spine well developed, oval in cross section. Precaudal vertebrae nos. 4-6 with neural spines depressed, tips pointed.

Description

Meristic characters. Dorsal finrays 69, caudal 14, anal 42, pectoral 26, ventral 1, anterior gill arch with about 18 rakers of which 1+1+9 are developed, pseudobranch with one or two filaments, vertebrae 12+34 (including ural centra), anterior dorsal finray above vertebrae number 6, anterior anal finray below dorsal finray number 32 and vertebra number 21.

Morphometric characters in per cent of standard length (73.6 mm) with measurements in mm in parentheses. - Head length 31.7 (23.3), upper jaw length 15.4 (11.3), diameter of clear window over eye 6.1 (4.5), diameter of pigmented eye 5.0 (3.7), snout 6.1 (4.5), fleshy interorbital 7.2 (5.3), postorbital 20.7 (15.2), predorsal 33.8 (24.9), preanal 64.0 (47.1), ventral fin base to anal fin 42.0 (30.9), ventral fin length 17.9 (13.2), and pectoral fin length 19.8 (14.6).

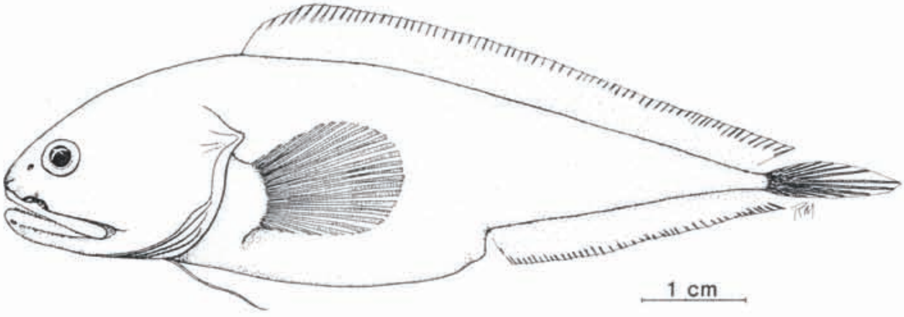

Fig. 4.– *Melodichthys paxtoni.* Holotype, SL 74 mm (AMS E. 5264). Body scales not shown. Drawn by R. Mayden.

Head about one third of standard length. Upper jaw extends well beyond rear margin of eye. Lateral line indistinct, marked by a series of tiny papillae arching from above the upper angle of the opercle over the pectoral fin and posteriorly along the midline of the body. Ventral fins each with a single ray. Lateralis canal head pores : preoperculo-mandibular 7, supraorbital 1, suborbital 2, lateral 1. Colour in alcohol faded pale brown, lips and fins lighter.

The anterior gill arch has 3 small tubercles plus a developed raker on the epibranchial, one developed raker at the angle and 9 developed rakers which grade into 6 tubercles on the ceratobranchial. Pairs of gill filaments on upper arm about 10 and on lower about 40. Pseudobranch with a single small filament on the left side, two filaments on the right.

Teeth. Dentaries with a band of small pointed teeth, wider anteriorly ; the inner teeth longer, slightly recurved, in an irregular row about a dozen teeth long. Premaxillaries with a narrow band of small teeth, wider anteriorly, posterior teeth rather bristle-like, anterior teeth larger and conical. No enlarged canines at symphysis. Vomerine tooth patch broadly V-shaped, with about 16 sharp conical teeth. Palatine tooth band 2-3 teeth wide anteriorly, a single row posteriorly. Teeth conical and sharp-pointed, the inner ones larger. No basibranchial tooth patches.

Axial skeleton (from radiograph). Precaudal vertebrae 12, caudal 33 including ural centra. Anterior neural spine about one-half length of second spine. Vertebrae nos. 4-6 with depressed, sharp-pointed spines, subsequent precaudal neural spines progressively more erect, with truncate tips, except for the last one, which is pointed. Centra 1-6 lacking parapophyses and with long ribs, the anterior three slender, the following three each with a proximal, flattened, blade-like area. Parapophyses present on centra 7-12, with epipleurals at their tips. Intermuscular bones associated with pleural and epipleural ribs.

Name : Named for our colleague John Paxton, Curator of Fishes in the Australian Museum, in recognition of his many contributions to ichtyology, both in research and curating.

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